

## PROBLEM:

Answer the following questions about the system whose  $z$ -transform system function is

$$H(z) = \frac{1 + z^{-2}}{1 + 0.77z^{-1}}$$

- Determine the poles and zeros of  $H(z)$ .
- Determine the difference equation relating the input and output of this filter
- Derive a simple expression (purely real) for the mag-squared of the frequency response  $|H(e^{j\hat{\omega}})|^2$ .
- Is this filter a Lowpass or Highpass filter? EXPLAIN your answer.